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## THE BIRDS OF NORTH KENT.

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(PLATE II.)

IN a previous article on the birds of this district (Zool. 1904, p. 161), I stated that the observations of the field naturalist as regards birds would fall naturally into three categories—either as being connected with the coast-line, or the marsh-levels, or the upland districts. In the article in question I dealt with the birds to be observed along the coast. In the present paper I propose to give the result of observations, extending now for some years, on some of the birds to be seen in the marsh-levels.

There is a strip of this low-lying, so-called marsh-land, extending right round the whole of the district I then defined, wherever the tidal estuaries of the Thames and Medway are touched by it. The tracts above Gravesend, and between that place and Woolwich, are either of such small size, or so encroached upon by buildings and factories, as to be of only waning interest to the ornithologist. The same remarks apply, although perhaps in lesser degree, to those portions lying on the Medway close to Rochester. But between Gravesend and the point where the South Eastern and Chatham Railway terminates at Port Victoria, and along the lower reaches of the Medway, there are long stretches of marsh-level, sometimes broadening out to a

width of two miles, sometimes diminishing to a narrow strip, which, except upon rare occasions, are only disturbed by sheep and cattle, and those who tend them.

The preservation of Hares in this district for purposes of coursing also has a decidedly beneficial effect so far as the birds are concerned. The owners of the land are all animated by the desire to keep a quiet sanctuary for the multiplication of these rodents. Trespassers are therefore warned off, and so a place of refuge is given for many birds during the spring and the summer months.

I make no apology for attempting first of all a short description of this marsh-land, because physical geography must, or should, always be one of the foremost considerations of a field naturalist, whatever class of life he may be observing, determining as it often does the species he is likely to meet. In the present case the extent and area of the waters of the marsh-land, the amount of cover afforded by aquatic and other vegetation, the denseness of human habitations, or the nearness of factories and towns, are the determining factors of the ornithological fauna of the district.

In order to appreciate the present features of the country it is worth while to attempt to consider its condition before the river-walls were thrown up, and when it was still subject to the encroachment of every tide. The saltings yet unenclosed give one the opportunity of doing this. In them you have some large stretches of land that have evidently been formed by the deposits of the rivers which run through them. They are, practically speaking, level, but much cut up by large creeks and lesser natural gutters and runnels. By supposing such a tract to be enclosed by a wall so that the sea could no longer flow over it, you might then surmise how the marsh has come to its present state. The large tidal creeks, some of which are fifty yards or more across, have formed in the process of time what are locally termed "fleets"—large winding lagoons bordered now at the edges by reeds, bulrushes, sedges, and other vegetable growth. Many of the smaller runnels of the one-time salting have become filled up, and present at the present day winding hollows in the otherwise flat meadow-land, filled only after heavy rains. Others of the small creeks have been kept open by



clearing the mud out of them at intervals, and heaping it up on their banks. That is the history of many of the tortuous ditches which wind their way between the meadows. Then, in order to assist or complete the system of surface-water drainage, straight ditches have been cut connecting the natural ones already existing. So that the waters of the marsh-land fall roughly into three divisions. There are the wide fleets, once the main creeks of the salt-marsh, now getting gradually narrower and shallower with the encroachment of their own vegetable growth. Then there are the narrow winding ditches, formerly the smaller runnels of the salting in which the silting process of nature has been prevented by the intervention of man. And, finally, there are the straight ditches, which are quite evidently, in their entirety, the work of men's hands. Some of the land has been enclosed within fairly recent years. It is called "new land" by the residents, who nevertheless cannot recollect the actual enclosure of it. But, according to the documentary evidence of ordnance maps, there are evidently several large tracts which have been enclosed between the survey upon which the present maps are based and the survey upon which the older maps were based. But both these surveys were spread over such a long time that I have found it impossible to get exact dates.

There is an interesting fact to note in connection with the silting up of creeks. It appears that those creeks which are still open to the tide, but in which there is no through scour, will shrink more quickly in width than those which have now been shut up from the sea for many years. The channel gets narrower although it remains deep. On the other hand, the fleets inside the wall get shallower, but remain their ancient width. The evidence on which I base this statement is that in the year 1840 a winding portion of Dartford Creek was shut out of the tide-way by the cutting of a new straight channel. But this winding portion, although it missed the scouring of the direct current, has never been entirely shut off from the tide. Presumably its channel was as wide at the time of making the new cut as the rest of the creek—say, some eighty to a hundred feet. At the present day the winding portion of the old creek is scarcely twelve feet wide. All the fleets in the marsh are much wider than the creeks outside the wall, of which they were once a part.

They are, however, much shallower. The reason seems fairly clear. The filling agent in the tidal waters is the matter in suspension. In the case of the inland fleets it is the erosion of the surface of the land by rain and weather. The volume of the first must be greater—and, of course, more frequent in its application—than that of the second. In the case of the inland fleets the settlement will be an even and gradual spreading from the edges to the centre, because there is no current, and they will therefore get shallower without quickly getting narrow. In the case of the tidal creeks there must always be a wash in the centre of the channel, both in the rising and the receding of the tide, which would tend to cut chiefly the centre of the channel, while not preventing its gradual narrowing from the edges. The daily deposit of suspended matter by the tide also accounts for the phenomenon (which I wondered at in my former article) of the level of the salting outside the wall being higher than that of the marsh-land within. If it were necessary to bring actual evidence to prove that the sea once flowed over the marsh, one could point to several beds of cockle-shells in the existing fresh-water fleets, and to the dead shells of periwinkles, and mussels and other bivalves, in soil dug out of the bottom of the ditches.

Such a district as this, which I have attempted to describe—with its nearness to the wide reaches of the estuaries, with its quiet stretches of inland waters and lagoons, and with their dense growth of reeds and rushes—makes an ideal haunt for members of the Duck family. My notes include observations on eleven species of this family, three of which nest in the district, and five of which, from their late appearances in spring and summer, I am always hoping—perhaps against the *dictum* of high authorities—to include in my list of nesting birds. A gunner would doubtless add several more to the eleven species that I have noted; for, whatever may be said against the practice of shooting wild birds, it is the one certain and indisputable method of identifying a species. The quickest observer, with glasses or without, in the hustle caused by a rising mob of startled birds, may be excused for missing the distinctive points of the one or two birds which look different from the rest of the string, and so lose his opportunity of adding a fresh name to his

record; while the large flocks floating on the river, or standing on the mud-flats a mile or more from the hard ground, are quite beyond the resolving powers of the best eyes or glasses. A list, therefore, of wildfowl made by a man who does not shoot, but who only observes, is not likely to be by any means a complete one.

In my former article I already gave a provisional list of the names of the Ducks observed on the waters of the estuaries of this district (Zool. 1904, p. 166). Of three of the species there mentioned—viz. the Pintail (*Dafla acuta*), the Common Scoter (*Edemia nigra*), and the Scaup (*Fuligula marila*)—my notes are extremely scanty, the only observations of them being on the tidal waters, and during the winter months. All my winter notes of the Sheld-Duck (*Tadorna cornuta*) point to its being resident all the year, but, during that season, confining itself to the tidal waters and mud-flats. But in the winter the wild weather makes the quiet waters of the fleets pleasant resting-places for the birds after the buffetings of the wind in the river, and a walk along their edges will generally result in the disturbing of several strings of Mallard (*Anas boscas*), and most likely also of Wigeon (*Mareca penelope*), and Teal (*Nettion crecca*). Less common, but still sufficiently often seen at that time of the year to be looked for with expectancy, are small parties of from three to half a dozen of Tufted Ducks (*Fuligula cristata*). My only notes of the Shoveler (*Spatula clypeata*), the Garganey (*Querquedula circia*), and the Pochard (*Fuligula ferina*) are in the spring and summer, and always on the inland waters of the marsh. The three species which I know to nest, from having handled the eggs *in situ*, are the Sheld-Duck, the Mallard, and the Shoveler. Five others, which I hope some day to record as nesting in the district, are the Common Teal, the Garganey Teal, the Wigeon, the Pochard, and the Tufted Duck. The shepherds of the district declare that the three first mentioned of these five species are nesting birds; but still, since I have been watching the district, they have never been able to show me the nests.

In the early days of spring the marsh seems simply alive with Ducks of all sorts. The mature Sheld-Ducks come in from the estuaries and the mud-flats, and may be seen standing about

in pairs, striking and conspicuous objects upon the green meadows. Pairs of noisy Mallards rise from ditches and fleets everywhere. They are, of course, the commonest and most obvious of the species present. But almost as common at this time of the year, and perhaps more striking—and certainly more interesting—are the Shovelers. There will still be Mallard, Wigeon, and Teal—possibly many of them migrants—collected in large flocks, which will rise and fly away in scattered strings. And you may have the added interest of seeing odd *pairs* of Wigeon and Teal, and of disturbing, as I have during the last two years, a small party of Garganey, or half a dozen Pochard, male and female, easily distinguishable as they fly.

In dealing with my notes of these birds more in detail, I will take first—of the breeding species, or possible breeding species—those which are least likely to become included in the latter category. As far as my own observations go, the Tufted Duck at present gives me the least evidence of nesting in the district. Up to the year 1903 my only notes of this species are in the months of October and November—generally, as I have indicated, in small parties of from three to half a dozen birds, put up from the quiet open spaces of water amongst the reeds and flags of the fleets. But in 1904 I have a note of a pair disturbed on March 14th; and in 1905 and 1906 I have notes of pairs seen as late as April 24th, at which date Mallards' eggs may be found hard sat. This bird is not distinctively known to the shepherds, and I am therefore inclined to think that it has only recently commenced to frequent the district in the spring. And it is not unlikely, considering its spread as a nesting bird in various parts of England, that it may presently stay, in such a suitable locality as this, throughout the breeding season.

The Common Teal is often enough seen all through the winter. But I have also notes of pairs of the birds as late as April 17th and 24th, in different years. This gives some countenance to the shepherds' repeated assertions that they have found this bird nesting, though not during the last three or four years. The Teal is a bird thoroughly well known to them, and I am inclined to think that the statement they make of its having nested may be believed. A mob of these small Ducks, disturbed in September of the present year (1906),

consisting of young birds of the year, and old together, seems to go towards corroborating their statement. But for myself, I can only say that I have not noticed any single birds or pairs later than the latter end of April. Concealed by my usual cover of the river-wall, I one afternoon (March 13th, 1904) quietly watched a large party of these Ducks playing and feeding in the shallow water of a wide fleet. It was a mixed flock of male and female birds, and the drakes were already decked in their breeding colours, and looked very smart as compared with the more soberly coloured ducks. They were a most lively party, continually on the move, turning tail upwards in the water as they tried to reach the bottom of the fleet, and every now and then breaking off the business of feeding to chase one another. Their most favourite action seemed to be to fly up into the air two or three feet, and then to fall into the water with a flop and splash, going right underneath. All the time they were playing they kept uttering a short sibilant whistle, and male and female joined in the play.

The Wigeon, again, is a bird which, according to the shepherds, has nested formerly, but not of late years, in the district. It is a bird which they know thoroughly well by sight, and of which also I have seen young ones of the year amongst mobs disturbed in early September. I have similar notes, as of the Teal, of flocks seen along the fleets in the winter; and also of a small party of them swimming on the estuary at high tide one February day. On the same day I heard the shrill, long-drawn cry of the male on one of the fleets several times; and I have heard a mob, when flying, uttering all the time a soft whistling note. But, again, my notes in the spring do not take one further than the end of April, through which month I always come across one or more pairs in various parts of the marsh. I am aware, of course, that all authorities rule out any portion of the South of England as a nesting habitat of this bird. But given pairs already mated in the district in the early spring, and sufficient quiet and want of disturbance, there seems nothing inherently impossible in the idea of the bird becoming a breeding species.

With regard to the Garganey and the Pochard, I feel absolutely certain that there were more than one pair of each of these species nesting in parts of the marshes last year, and that it is

only a question of having longer time to give to watching them, or perhaps the assistance of a good dog, in order to have the confirmation of seeing their eggs. Taking the Garganey first, I believe one of my shepherd friends has already found this bird's nest; for such I take to be a nest of eggs laid by what he described as a "small pale blue duck about the size of a Teal," which he found one year in the rough grass near the edge of a fleet. Apart from this, however, my own notes of the bird through last spring make me quite certain that it was breeding somewhere in the district. My first entry is dated April 16th, when I disturbed three of the birds from amongst a bed of reeds. On May 13th, and again on May 18th, I saw *single* birds, swimming on two different waters of the marsh—an observation pregnant with possibility of a sitting mate somewhere near. There is one field covered with a good bit of coarse tussocky grass, which I have in my mind as being the nesting-ground of one pair. My exploration of this meadow was prevented by a very obstinate shepherd, with whom I could not manage to get upon friendly terms; and, rightly or wrongly, I lay the blame to his door of not having been able to confirm my suspicion as to the nesting of the bird. I am hoping next spring, either by diplomacy or strategy, to get the confirmation required.

The Pochard is a bird that seems also to be unknown to the shepherds. It is, however, a sufficiently distinctly marked bird, and, although I only noticed it for the first time to any extent last year, I then had some very good opportunities of watching it. But I have an egg, hurriedly taken (April 19th, 1904) when bound by time to catch a train, which I believe to be a Pochard's egg. The nest was in rushes close to the edge of the water of a wide shallow dyke. There were seven eggs in it, but no downy lining. The duck, as it flew off, had the appearance of being dusted over the back with flour. The peculiarity of its appearance made me take one of its eggs as I hurried along to catch my train. Unfortunately, I was unable to get back to the site of the nest again that spring, and so did not get any more definite observations concerning it. But my notes of this year are definite enough to prove the bird to have been nesting somewhere in the district last spring. In the middle of April I

watched for some time a party of about half-dozen males and females. Although disturbed twice, they returned again to the sheet of water on which I first found them. A thick-set duck, somewhat smaller, or shorter than a Mallard when in flight, its red head, black gorget, lavender-grey body, and black tail-quills make the drake an easy bird to identify. The ducks flying with them looked a very sombre brown in their contrast to the light grey body-plumage of the drakes. In flight the birds utter a curious note, bearing no resemblance to the quack of a duck. My own attempt at the phonetic spelling reads "quer-r-r-k." To see one of the drakes on two later occasions, when I again visited that particular sheet of water, the second or third weeks in May, dozing peacefully on the surface of the centre of it, seemed to me sufficient proof that its partner was sitting in some secluded corner near by on a full clutch of eggs.

Passing from these possible breeding members of the Duck family to those three species of which I have actually handled eggs, the Mallard, as may be supposed, is the commonest of them. A resident species all the year round, it may nevertheless be an open question whether those flocks seen upon the river and the marsh waters during the winter necessarily contain amongst them the birds which pair in the spring. Whether that be so or not, there are at any rate many more birds about at that season than have ever nested in the district, and a large proportion of the flocks must be winter visitors which scatter and leave in the early months of the year. It is not necessary to go much into detail as to the nesting of this species. There is a considerable breeding population, which does not by any means confine itself to the marsh-levels. Indeed, one keeper informed me that more pairs nest on the uplands than on the low ground. A good many take shelter for this purpose in one or two rough pieces of woodland, making their homes under bushes, in much the same sort of site you would expect a Pheasant to choose. I had one quite startling experience of the variety of positions chosen by them. A very bulky Magpie's nest at the top of a tall stout blackthorn (a characteristic feature of one piece of woodland) excited my curiosity by the wide openings at each side of the canopy of sticks, and by some white feathers projecting over the edge. The blackthorn was something like twenty feet high,

and the nest was in the very topmost twigs. Without a thought of Wild Ducks in my mind, I made my way to the top somewhat painfully, on account of the strong, large, and very sharp thorns which covered the tree in profusion. As I put my hand over the edge of the nest the bird flew off almost in my face, seeming such a giant of a bird as it flapped about, that it was not till it had got clear of the tree that I collected myself sufficiently to see what it was. The nest contained ten eggs already very hard sat on April 24th. Of course, there is the old problem to solve here, as to how these young ducklings would reach the ground in safety. A shepherd living in a house on the marsh-levels told me this year (1906) that for two successive seasons a pair of these birds had nested on the ridge of a haystack near the house. He is confident that their method of getting their ducklings down from such places is of the simplest. The day after all the eggs are hatched the duck, according to his account, leaves the nest, flies down to the ground underneath, and starts calling to its progeny. The latter hear the call, and, in obedience to the instinct to follow it, or go to it, simply tumble down over the edge of the stack on to the ground. He says that he has watched the duck standing on the ground calling like this, and, although not near enough to see the ducklings fall, has shortly afterwards seen the brood following the parent bird down to the water. Falling over the edge of a haystack on to grass or litter is, however, a comparatively easy method of making a start in life for the young ducklings as compared to tumbling through the numerous prickly branches of an old blackthorn-tree. My sympathies certainly go out to the brood in the Magpie's nest, which must have had a most thorny introduction to the struggle for existence. The most usual site chosen, taking my own experience as a basis, is the centre of a tussock of grass or rushes close to water. One somewhat unusual nest I found was right in the centre of an open space covered with the stumps of cut reeds. A raised platform had first of all been made with bits of reed, and on the top of this had been formed a circular wall of down fully nine inches high. With the bird sitting on it this structure looked like a mound raised some twelve or fourteen inches above the flat ground. It is also somewhat unusual to find the nest, when made, on the marsh-levels, anywhere except

near to margins of water. The nest just described was some distance from water. Another one of quite a different type I found in the centre of a meadow of rough grass. In this case the bird had scratched out a hollow in the ground in the centre of a very thick bunch of grass. The hollow was lined with grass-stems, and the down formed a thick top covering. The bird was off this nest when I found it, and the down was drawn right over the eggs. It was exceptionally dark, almost black, in colour, and on that account was very far from being an aid to concealment, looking, in fact, like some black furry animal lying in the grass. The bird, however, when sitting on this nest, was very difficult to see, as it sat low in the grass, which drooped over it so much as in a great measure to conceal it. Favourite nesting-places also are certain floating islands of aquatic vegetation, which are numerous in some of the fleets. The nests made in these spots are somewhat after the type of the last one described. I think it is fairly certain that the bird does not start to make the downy portion of its nest until after the full clutch of eggs is laid, and it has begun to incubate. I have watched the layings in many nests, and they have always borne out this theory. The down is really just an outer covering quite separate from the nest-hollow, holding itself together by the nature of the filaments, and worked by the duck from the outside margin of the nest to the centre. If you find a nest with a covering drawn over the eggs, which is the natural way for the duck to leave it, you will always be able to separate the down from the centre without breaking its coherence, and you can push it back round the outside edge into a circular ring. You can then draw it together again with your fingers into the exact state in which you found it; and there is little doubt that in doing so you are doing with your fingers exactly what the bird does with its bill. My notes on the laying of the eggs point to one egg being laid each day until the clutch is completed. In the late spring you may often come on broods of the ducklings feeding with the parent birds along the ditches. Upon such occasions the whole family will often lie absolutely still upon the surface of the water amongst the growth at the edge of the ditch, putting all their trust in their protective coloration. The old bird generally lies with its head stretched out along the surface of the water. When

they see for certain that they are observed, different tactics are made use of. The parent bird generally attempts the imitation of a wounded bird, while the young ones dive and scatter in all directions.

My notes on the Shoveler are all dated between the beginning of April and the end of June. As far as my own observations go, the bird only comes into the district for the purpose of nesting. I should not care to say that the species may not be present amongst the big mobs of ducks on the estuaries in the winter; but I have never seen them at that time along the fleets. They are a duck easy at once to identify upon the wing by the difference in the proportions, as compared to other ducks, of the comparative size of the head and body. The drake Shoveler in the spring time may be further distinguished from the Mallard by the bright chestnut band across its lower breast showing up plainly against the pure white, and also by its deeper, more abbreviated, and rather subdued note, which might be syllabled perhaps as "t-o-o-k." In the first two weeks of April these birds become conspicuous in the marshes, almost invariably in pairs, standing on the banks of the dykes, or running in the meadows with alert movements. When disturbed they circle round with a very swift flight, and it may then be noticed that they have more sharply pointed wings than the Mallard, and swifter and less lumbering movements. Sometimes the first pair disturbed will be joined by another, and the quartette will circle many times round, coming down often as though to settle, then rising again and doing another turn before finally alighting. By the middle of April they have begun nesting operations, and are not then nearly so demonstrative or apparent. They evidently begin laying soon after the first week in April, for on the 19th of that month I have found a nest containing eight eggs, which would mean that laying had commenced at least eight days sooner. Close sitting possibly does not always follow directly the clutch is completed, because in the case of this nest, although eight eggs were the complete clutch, yet the brood was not hatched out on May 13th—*i. e.* twenty-five days later—the bird being at that date still sitting on the nest. On May 18th the brood had gone off. Summarising my notes on the nests of this duck, gathered from the examination of six

nests in 1905, and five more in 1906, it appears that the bird keeps to one definite method far more than the Mallard does. Nearly always at some little distance from water, out in the middle of a meadow, where last year's dry grass is still standing so as to afford some little cover, it will scratch a cup in the soil, some five inches in diameter and four inches in depth. This it lines thickly with grass. As in the case of the Mallard, it lays—at any rate its first few eggs—without making any covering of down. A nest with four eggs, found on April 16th, 1906, had no sign of down about it. The nest-hollow being made generally amongst the standing blades of last year's dead grass, as the spring advances, fresh grass grows rankly under the shelter of the old growth, and so helps to conceal the sitting bird. The downy covering is made after the same style of pattern as that of the Mallard. A peculiarity worth noticing is that both birds get a considerable amount of little short pieces of dead grass mixed up with the down. This grass appears as if it has been broken up into pieces by the bird itself, and, if so, this mixture with the down might perhaps not be accidental, because its entanglement is a distinct aid to holding the down together. Watching these nests, as I got opportunity—more especially during 1906—I found that the eggs were always covered by the down being drawn over them when the bird left its nest of its own free will. The eggs on such occasions were always very warm; in fact, the thick covering of down must be one of the best natural non-conductors of heat that could be improvised. Owing to the shadow cast by the long blades of grass these down-covered nests are not easy to see, passing, under careless observation, for rough clods of soil amongst the grass-stems. If the bird has commenced incubation it sits very closely on its eggs. I have stood right over one for some minutes, watching it; its head and beak were turned back over its shoulder, and its bright eyes were fixed upon me the whole time. It seemed to be able to depress itself amongst the grass-stems in quite a wonderful manner for such a comparatively large bird. The grass having already begun to get long, it might have been easily passed without being noticed. When the sitting bird is disturbed it invariably brings into play all those well-known devices of fluttering along the ground in pretence of

being maimed, in order to draw the intruder away from its nest. Then the characteristic proportions between the head, with the long wide beak, and the body are very apparent; and, further, as it flutters along with outspread wings, you can always see distinctly the patch of pale blue feathers on the carpal joints of the wings. When it is disturbed the bird stays a long while away from the nest. My own time is generally too limited to watch them back. I have, however, watched upon occasions for three hours in vain. After fluttering away the duck rises in the air, and is almost at once joined by the drake, both circling round together, sometimes calling at the same time, and finally disappearing to some other part of the marsh in order to allow time for the intruder to go away. In these marshes Carrion-Crows are the chief enemies of both this species and of the Mallard. In 1905 they seemed to be particularly unfortunate in this respect, as I found no fewer than four nests in which the eggs had been sucked. In 1906 they were more fortunate, in so far as they came under my observation. Four out of the five nests I watched were hatched out, because late in the summer, when I visited them, I found the egg-shells of the hatched eggs trodden down into the bottom of the nest-hollow.

The Sheld-Duck, locally called "Bar-goose"—a resident all the year round—spends the winter months generally on the estuaries, and on the mud-flats when uncovered by the tide. But while during spring the only individuals of the other species of duck which remain in the district seem to be occupied in the business of nesting, large numbers of non-breeding Sheld-Ducks stay in the vicinity all through the summer, still being seen feeding on the ooze in flocks at the same time as breeding pairs will be scattered over the meadows of the marsh-land. Doubtless this is one of those species which take two or more years to come to maturity, and the flocks in spring are perhaps composed of immature birds, only the older ones taking up the responsibilities of wedded life. It is worth while to mention an interesting observation which goes to prove that the very striking plumage of this bird does not necessarily make it so conspicuous as might be supposed. Roughly, it might be described as being a piebald bird. Its plumage is boldly patched with white and black and chestnut, but at a distance the markings do not

appear as colours, but simply as light and shadow. A party of a dozen or more of these birds which I was watching one winter's day swimming in the rough water at the edge of the tide was most difficult to distinguish, owing to the fact that the light and dark patches of plumage corresponded almost exactly with the bright lights and deep shadows of the broken water. The further fact that I was once deceived into supposing that some white pieces of stone lying on the bank were Sheld-Ducks illustrates another way in which this striking plumage is an actual aid to concealment ; for, if the bird happens to be standing with a dark coloured background behind it, the dark patches will blend, at certain distances and under certain conditions of light, with the background, and all that will be visible will be the light or white patches of plumage, which bear absolutely no resemblance at all to the shape of the bird. The contrary effect takes place when the conditions are reversed. The light patches will blend with the light background, and the dark portions of the plumage then show up in the same way, as something that does not look at all like a bird. This gives a working theory as to protective coloration which may be applied to many more birds than the Sheld-Duck, and it is one worth while keeping in mind by the student of bionomics. It is especially interesting because it points to the possibility of markings which at first sight might be considered as militating against a species, being really a protection to it under several distinct sets of conditions. But, notwithstanding all this, a Sheld-Duck standing in the centre of a meadow green with the spring growth of grass is a sufficiently striking object, and one which may be often seen on these marshes from the end of March onwards through the spring and summer while their nesting operations are in progress. In the raised banks formed by accumulations of bottomings from the ditches there are in many places rabbit-warrens of considerable size, and the burrows are what might be called the natural site in the district for these birds to choose for their nursery. During my first day spent on these marshes a shepherd informed me that Bar-geese nested in the rabbit-burrows, and, although I have not myself found any nests in them, several of my shepherd friends often do so ; in fact, they generally take a clutch or two of eggs every year for some of the neighbouring farmers, who hatch them out

under hens, and thus obtain an ornamental addition to the denizens of their farmyard. On an island in the old moat surrounding Cooling Castle, I have seen large numbers of wild Sheld-Ducks, attracted by a number of pinioned birds of the same species, sitting about quite fearless of the passers-by along the road within thirty or forty yards of them. But a much more interesting nesting-site than the burrows, showing as it does the adaptability of these birds to novel circumstances, is supplied them through the preservation of Hares for coursing. In order to give the Hare either a refuge or a chance of escape, long drain-pipes have been laid in some of the higher banks, or in any conveniently raised mounds in the meadows. These pipes, which measure from six to nine inches in diameter, are generally about eighteen feet long, open at both ends, but with a bend in the centre, so that one cannot look straight through them. Sometimes there are shorter ones, which run straight in with one end blocked. It is these blocked-up pipes which the Sheld-Ducks of the district more particularly favour. Of three nests which I examined during the spring of 1906, two were made in blocked-up pipes, at the end farthest away from the light; and the third one was made in one of the pipes open at both ends with an angle in the centre. The blocked-up end of the pipes is generally not very far from the surface of the ground, and with a little ingenuity or perseverance it is generally possible to make an opening near to the nest. The first nest I found on May 12th had fourteen eggs in it, three of which I blew, and found to be quite fresh. They were laid right on the bare earthenware pipe, with no down or feathers about them. This nest was quite close to a shepherd's house, where the birds have nested for several years in succession, although the shepherd often takes a clutch of eggs from it for his employers or friends. The remaining eggs of this clutch were taken by him a few days later for the same purpose. The second nest was in a pipe situated in a secluded part of the marsh. The bird was sitting on this nest when I found it, while its mate was standing in a meadow some hundred yards away. Looking in at the open mouth of the pipe I could see the white breast of the bird as it sat on the eggs at the far end. As it caught sight of me it started hissing somewhat after the manner of a goose. A few

sods moved at the back end made it take its departure very hurriedly, running along the ground some distance before taking wing, when it was immediately joined by the mate, both uttering the half-bark, half-cackle, which their cry resembles, as they flew out over the river. This nest had ten eggs in it, which were quite fresh, and were also laid on the bare pipe, with no feathers or down around them. The third nest I did not examine in the spring, but I was told of the bird having been seen going in and out of the particular pipe in which the nest was situated. In early September I looked at this pipe, and found a great mass of down at the bend in the centre of its length. It may be concluded from these observations that this bird, also, does not start to pluck its down for covering the eggs until after the full clutch is laid, and steady sitting has begun. The eggs in the two nests first mentioned differed enormously in size; three which I took of the clutch of fourteen measured as follows:— $2.70 \text{ in.} \times 1.95 \text{ in.}$ ,  $2.75 \text{ in.} \times 1.95 \text{ in.}$ , and  $2.70 \text{ in.} \times 1.95 \text{ in.}$ . The two which I took from the second nest measured only  $2.55 \text{ in.} \times 1.75 \text{ in.}$ , and  $2.50 \text{ in.} \times 1.75 \text{ in.}$ . I should be inclined to assume that the smaller eggs were laid by the younger bird. I believe the eggs of the Mute Swan and domestic Goose also vary in size according to the age of the bird. On June 15th, 1902, I came across a young brood of these birds with their parents, swimming along the centre of one of the widest of the fleets. My attention was drawn to them, as so often is the case, by the excited behaviour of one of the old birds which I took to be the male. It started flying round me in circles near the ground, evidently in a great fluster, every now and then settling in the meadow, and running quickly and actively away from me. I was walking along the edge of the fleet at the time, and of course I at once began to search in other directions than that of the excited bird for the cause of its behaviour, and then I saw the other old bird with seven youngsters swimming round it. The young ones had a most curious appearance, from the markings of the down looking at a distance like black and white transverse stripes. More close inspection with the glasses seemed to point to the patches of black and white of the down corresponding very closely with what would be the markings of the mature bird. My sketch of these young birds made at the

time differed somewhat from the sketch given in 'The Zoologist,' 1903, p. 131, by Mr. J. H. Gurney. Passing back in the afternoon of the same day, I again saw this interesting family near the same spot, and the male once more went through the same series of evolutions to draw me away as in the morning.

The members of these three species of ducks breeding in this district are, I think, on the increase. The Mallard has probably always been common as a nesting bird, but I believe that the Shoveler has only become a breeder here during the last five or six years. My first note of seeing the bird in spring was in 1902; they have certainly increased in numbers greatly during the last two years. The Sheld-Duck perhaps has bred in small numbers for some time. I have been told all along, by shepherds and farmers, of birds nesting both in the pipes and in the rabbit-burrows; but I am certain that the numbers of nesting birds, of the non-breeding birds, and of the winter flocks have all increased during the last three years.

A matter of some interest in connection with the nesting of various species of ducks is the identification of them by means of the down with which they cover their nests. Amongst this down there is always—I think one may say invariably—some admixture of small breast contour feathers. In my opinion these latter feathers are a much safer guide to go by for identification than the down itself. In the three species in question these small feathers from the breast have very distinctive markings, as may be seen from the accompanying Plate II. Of course, the Sheld-Duck's nest is identified easily enough without any such aid as this, but still it is interesting to compare the three feathers together. In the Sheld-Duck the feather is a very pure white, with the tip shaded with sepia, so dark as to be almost black. The depth of this coloured tip varies somewhat. Occasionally it is nearly lost through abrasion, and more rarely absent altogether, the feathers being then pure white all over. There are also a very few French-grey feathers of the same shape amongst the down. In the small breast-feathers of the Mallard the dark strip in the centre is deep umber in colour. This dark strip always runs out to the very end of the web. It sometimes widens out at the base so as to be hastate in shape. The rest of the feather-web is a dirty white. In the Shoveler

these feathers have a very deep umber or almost black spot in the centre of the web, leaving a pale margin all round. The fluffy part at the base of the quill is whitish grey, but the margin of the web surrounding the dark spot is a warm chestnut. As far as my experience goes, there can be no possibility of confusing the small feathers of the Mallard and the Shoveler, and I have never yet found a nest of either of these species which had not some of the breast contour feathers amongst the down. The average size of these feathers corresponds to the size of the bird, the Sheld-Duck's being largest, the Mallard's next, and the Shoveler's least. From an examination of the down itself, which, of course, forms the bulk of the covering of the nest, you find that every particle of down consists of a minute abortive quill, sometimes not much more than a scale of epidermis, from which radiate numerous filaments equivalent perhaps to the barbs of an ordinary feather. These are again branched through their whole length with what may be called barbules, the latter themselves being furnished with nodules, taking the place of the ordinary barbicels and hooklets. As regards colouring, the Sheld-Duck's down is a greyish white, with a touch of lavender. The Mallard's and Shoveler's downs are both a deep umber-brown, with a pale centre verging on dirty white. Normally the Shoveler's is of a much darker brown than the Mallard's, but in the case of a Mallard's nest, which I have described earlier (p. 51), the down was much darker than that of any Shoveler's that I have seen. Therefore, as regards colour, these two downs are very apt to be confused. There is still, however, another means of differentiating them. Each particle of down, if you lay it on a flat surface, will, roughly speaking, form a fluffy sphere. That of the Sheld-Duck is much the largest and most voluminous of the three, and measures approximately 1·7 in. in diameter; the Mallard's comes next, measuring 1·3 in.; and the Shoveler's is the smallest, measuring 1·1 in.

OBSERVATIONS TENDING TO THROW LIGHT ON THE  
QUESTION OF SEXUAL SELECTION IN BIRDS, IN-  
CLUDING A DAY-TO-DAY DIARY ON THE BREEDING  
HABITS OF THE RUFF (*MACHETES PUGNAX*).

BY EDMUND SELOUS.

(Continued from vol. x. p. 428.)

*April 23rd, 1906 (cont.).*—1.15 p.m. The brown bird and one other—a recognized *habitué*—is now back. The latter soon goes, but the brown bird stays on alone, and has now been here twenty-five minutes. Shortly afterwards he leaves too.

It is curious that with all the excitement—especially in the last instance—which the presence of the Reeve has caused, though there has been some desultory sparring, yet no prolonged or embittered duel has taken place in it. I cannot, from my own observation, thus far, say that she is the *teterrima causa belli*, though she certainly has been of general commotion.

Looking out, again, at 2.30, I see the brown bird, alone, on the meeting-ground. At 2.50 the other *habitué*, mentioned before, is back, these two being the only ones, till 3, when another, which I also recognize, flies in.

The brown bird, now, on the arrival of two or three other ones, not only flaps his wings, stretching up on tip-toe, as they circle round, but at last rises and hangs hovering in the air for a little.

3.45.—There are now some six or seven birds, when a Reeve arrives. All but one sink, forthwith, upon the ground, and remain there prostrate, whilst she stands in about the centre of them quietly preening herself. The one Ruff who does not prostrate himself, but stands indifferent, has his feathers hardly at all grown. Amongst the others, after a time, there is a little bustle about, and then another, but with no real fighting. After each they sink down again, but seem now to be pretty much at

their ease. Still it appears evident that they are in a state of real, though suppressed excitement, and the bustles are repeated, from time to time, without any independent cause—such, for instance, as the arrival of other birds—though when several more do fly in there is, naturally, a commotion. Amongst these there is the one that was caressed, several times, by a Reeve yesterday—whether she was the one now here I cannot say. He is not caressed now, however, nor is any other Ruff, and after a while the Reeve, followed by most of them—he included—flies off. In about five minutes she returns alone.

The fighting, on those occasions when the birds make their little bustles as I have called them—little runs or turnings whilst still crouched to the ground, and either close about the Reeve or yet, seemingly, with reference to her—is of very short duration—a spring or two, which is often hardly more than a threatening, and all is over.

Most of the Ruffs that went off, a little while ago, with the Reeve, have now come back, but, before long, she leads almost all the flock off again. There are now, at 4.20, only four remaining, the brown bird and his former companion making two of them. Several times, after a blank space, these two have come and stood or sat alone, and they must, I think, spend two hours to most of the other's one upon the ground, and an even greater proportion than that to the time that some of them spend there. The most interesting evidence of superior attachment to the meeting-ground on the part of some birds to others, was the persistency with which this same brown Ruff—he is the only one brown all over—stayed there, and returned again, shortly, whenever he left, when no other of them would, for a long time, alight, or stay more than a moment or two, if they did.

*April 24th.*—Get to my watch-house about 3.15 p.m., putting up four birds, two of which are the brown one and that other *habitué*. After a time a Reeve arrives, all the Ruffs sink down in the orthodox manner, but one rises very soon, and is now standing with head turned back, and beak amongst its back feathers. All at once two birds bounce up and dash at each other. It is over, however, as usual, almost ere well begun, and another sudden commotion hardly leads to a fight. All this might have happened without the Reeve, and a fight which took

place before she came was much more protracted. All now fly off with the Reeve, but in less than a minute most of the Ruffs come back without her.

At a little before four a Reeve flies in, and immediately, on alighting, runs over the course to the brown bird, who stands on the opposite side, and I believe touches him on the head or neck with her bill. This, however, I could not quite make out, but, almost immediately, she was crouched in front of him, and he, rising up,\* the nuptial rite is either performed or attempted. I should say the latter, for, at quite short intervals, now, the same thing is repeated four several times (making five in all), after which there is a longer interval, the Reeve standing by her brown bird. When she moved on these occasions, preparatory to the rite being performed, all the Ruffs frowned about on the ground, turning to this side or that, but whilst it was actually taking place—at least on the earlier occasions—they lay still in the curious prostrate attitude which is such a feature of these gatherings. After the fifth coition, or attempt at it, another Reeve flew in, and, going up to a handsome blue-gorgeted Ruff, with just the same assured manner in which the other had approached the brown one, touched him with her beak upon the head. Neither, however, did he rise, nor did she crouch, as in the other case. She remained standing by him, and, a little while afterwards, went over to the brown Ruff, but whether with any design or merely as walking away I cannot feel sure, though I thought at the time that she had a motive, which, in itself, seems likely. At one time both the Reeves were close together beside the brown Ruff, and it was just then that two more pairings took place between one of them and the latter. There was so much bustling about of other Ruffs at the time that I could not say for certain which of these two Reeves it was that acted, on these occasions. I believe, indeed, it was the same bird throughout, but this is hardly more than an opinion.

After each of the last pairings the brown bird made a rush over the course, and sprang at some other one, but the fight was almost instantly over—a mere violent leap or two. At these times, also, there was general excitement and running about leading to some other encounters of a similar character. Harder

\* He had, I suppose, sunk down at her approach.

fighting than this there was not, nor, as I say, was there any interruption, by any other bird, of the nuptial rite.

About 4.15 the two Reeves, with all or most of the Ruffs—some nine or ten perhaps—fly off, the Ruffs only returning, in a very short time. At 4.25, however, one Reeve returns, and, after standing for some time, quietly, always by the brown bird, the rite is again either performed or attempted. That it is the same Reeve who had first selected this bird I have little doubt, and I think, too, that I recognize her. She has yellower legs, and is a prettier bird than the other. Thus there have been eight pairings in all, seven of which were in quick succession, if we do not suppose that some, at any rate, were attempts merely. This I am inclined to conclude from the time occupied having been so extremely short, besides that the general appearance seemed often that of an unsuccessful attempt. This is not, I think, a matter of no moment, for the more difficulty there may be in the performance of the sexual act the more necessary becomes the co-operation of the female, and from a state of things such as this one would expect developments to be along the lines of the male's conciliating rather than hectoring over or bullying her. Only had the male special organs of prehension, or some other sure means of making his will valid, might we expect otherwise. However, we should assume nothing, but get evidence.

The attitude of the Ruff just before the performance of the rite was very striking. Bent almost in a semicircle, with head and tail touching, or nearly touching, the ground, his wings half outspread, and drooped, he seemed full of fire and conscious importance. This attitude was continued during the rite itself, and in its ample, proud cloak, so to speak, the little Reeve was covered up and almost lost.

4.50.—Four birds, after the usual stretching up and wing-flapping, in view of fresh arrivals, rise and hang fluttering in the air at different heights a little above the assembly-ground. The arrival having been delayed, this took place again, but with three birds only, one of the four having flown off. Then a Ruff flew in, and afterwards a Reeve, who, however, stayed but a minute or so.

I write the above outside my plaid, and, turning my head

inside it, again, I see a number of Ruffs, newly come in, and one Reeve, if not two. If two, however, one soon flies away. This Reeve goes to no bird in particular, and there is no rite. The behaviour of the Ruffs, during her stay, is interesting and significant. Pressed to the ground in the usual manner, they seem all to be awaiting in a state of suppressed excitement something that will, or may, take place. At intervals, however—sometimes owing to some slight motion on the part of the Reeve, sometimes without this incentive—they all frounce about, still hugging the ground, in the way I have described; then, rising, dart about over the course, sometimes springing at one another and sparring a little—but this is quite subordinate. Several may press about the Reeve in a way difficult to describe—indeed, it is all difficult. It indicates strong sexual desire, but the power of initiation seems wanting. In fact, they seem—and everything, up to the present, points to the fact that they are—governed by the consciousness of being able to do nothing without the co-operation of the Reeve—she must first signify her wish. Of display there is something, but it is not such a set or formal display as in the case, for instance, of the Pheasant or Pigeon—excitement seems to hinder this. The best example of it is when a bird, darting, first, right away from her, turns, and, darting back, again, right to her side, with ruff swelled out, and wing (I think on her side) drooped, seems, for a moment, as though he would overwhelm her with his gallant show, but, the next, sinks prostrate at her side, and remains thus glued to the earth. Though highly desirous, in fact, the birds seem to know that they must wait, and to fear to dare too much; there is a suggestion of enforced submission, an “*I would, an if I could*”—the tempest is contracted, each wave seems to fear to break. For the Reeve, everything about her, her every action—still more her inaction, her easiness, and unconcern—suggests that she is complete mistress of the situation, that every Ruff on the ground is absolutely dependent on her will. In fact, she seems the plain and unconcerned little mistress of a numerous and handsome seraglio, each member of which, however he flounce and bounce, can only wait to be chosen.

The pairing, then, has now commenced. Yet only two Reeves have come to the place from 3.15 to 7.30, and whether both or

only one of these (as I am inclined to think) has paired, in either case it is with only one bird out of some nine or ten, perhaps, that were there, at the time—fourteen or fifteen, I think, being the full number of the Ruffs that came in during the afternoon. If this is a criterion of the general course of things, one would think that the majority of the Ruffs must suffer from enforced celibacy, and this would account for such sexual aberrations as I have before mentioned, and a further example of which took place this afternoon, a certain male, upon three or four occasions, coupling, to all intents and purposes, with a certain other one. This was during the second visit of the one of the Reeves, and in the height of the excitement consequent upon it.

About 6.20 a Reeve—that one between whom and the brown Ruff the rite has several times been performed—flies in. This time the actual wooing of the males is more marked. Several press about her, ruffling their feathers, and one in particular—a handsome blue-ruffed one—the *habitué* I spoke of, and who has before been distinguished by female attention—presses more than once against her. She, however, is not moved by any, but when the brown bird comes up it is different. Now, however, there is interference, and the pairing, which I think would otherwise have taken place, is prevented. On one occasion, just when it seems about to be, a Ruff, almost devoid of nuptial plumage, runs up and gives the successful lover a peck. On another he has to fight with this or that bird whilst the general hurly-burly about the Reeve is greater. Thus things cannot reach their goal, and the Reeve, quite impervious to the charms of any other about her, stands, now, quietly, and looking quite unconscious, by the side of her own brown bird. At 6.40 she flies off, some of the Ruffs having gone before. I forget if any accompany her—one or two do, I think—but the brown one, at any rate, remains.

(To be continued.)

## NOTES ON THE ARCTIC WHALING VOYAGE OF 1906.

BY THOMAS SOUTHWELL.

THE year 1905 being the twenty-fifth consecutive issue of these whaling notes seemed a convenient period for their discontinuance, but there are certain features in the venture of the past season which are of exceptional interest, and which induce me once more to ask your indulgence.

I may at once say that the voyage for the crews has been one of great hardship, and of heavy loss to the owners of the vessels. It is only the very high price of whalebone, of which there is a great scarcity both in Scotland and in America, which has in some degree helped to meet the expenses of the four vessels which have been partially successful.

In Davis Strait, which has for a long time been the only profitable resort of the Scotch whalers, only two medium Whales have been killed. This has been owing to the long-continued easterly winds having so compacted the ice that the vessels were unable, for the first time since the year 1878, to penetrate the pack in Melville Bay, and thus were excluded from the "north water," and the favourite resorts in the neighbourhood of Lancaster Sound. The summer fishery in the "middle waters," generally a sure find, was also rendered impossible. The result was that the 'Eclipse,' 'Diana,' and 'Windward' were clean, and the 'Balæna' and 'Morning' only procured one Whale each, yielding 15 cwt. of "bone" respectively.

From Hudson Strait the 'Active' reports that the month of July was characterized by strong winds, accompanied by rain and snow; she reached the mica-mines on 4th of that month, but was unable to force her way through Fox Channel, which was blocked by ice, and devoted the rest of the month to Walrus hunting, of which she killed some three hundred and fifty. On the 23rd she killed her only Whale, a small one of but 3 cwt. bone. The heavy ice preventing the vessel reaching the settlement in Lyon's Inlet, the men whose turn it was to be relieved

only reached the ship after five days' journey over water and ice, and the substitutes and stores landed on Sept. 12th in Repulse Bay had to be conveyed in the same tedious and exhausting manner on the return journey. After again visiting the mica station the 'Active' bore up for home on Oct. 7th.

Another remarkable feature in the past season is the fact that for the first time since the year 1899 Whales have been killed in the East Greenland Seas, Capt. Robertson, of the 'Scotia,' having captured four small fish, yielding in the aggregate 40 cwt. of bone. From this there seems reason to hope that these valuable animals are still present in these seas in greater numbers than was suspected; they are so dependent on glacial conditions that their absence may be more apparent than real. This was illustrated to a remarkable degree in the season of 1888, a most interesting account of which voyage, from the pen of Mr. (now Dr.) Robert Gray, appeared in your pages in the first three months of 1889. Although Whales were seen in abundance to the end of May, early in June the swell from the south-east broke up all the floes, and the Whales disappeared, only four being killed by the five vessels present (*cf.* Zool. April, 1889), three returning clean. Capt. Robertson remarks that "when we get a tight pack-edge from 80° to 77° N. very few Whales are caught, and when the margin of the ice is in west longitude it is nearly always hopeless"; and adds: "About the year 1891, Capt. David Gray told me he estimated there were seven hundred Whales in the Greenland Sea. In four seasons since then I have seen a great number of Whales, particularly in 1895, whereas only ten have been caught since that year. The race is certainly not getting exhausted in the Greenland Sea, and never will be. I consider the apparent absence of Whales at North Greenland (during some seasons) entirely due to ice conditions." This optimistic opinion of a man of Capt. Robertson's great experience is certainly very reassuring.

Seven vessels were actively engaged in whaling in the past season, three of which were clean; the ketch 'Queen Bess' is attached to the Hudson Strait station, and the 'Albert' is wintering at Pond's Bay. The total produce was: 7 Right Whales (4 from East Greenland, 2 Davis Strait, and 1 Hudson Strait), 8 White Whales, 534 Walruses, 1264 Seals, 189 Bears, 817

Foxes, 111 tuns of oil, and 73 cwt. of bone. The Seals, Foxes, and Walruses were killed in Hudson Strait, and by the vessels wintering in Pond's Bay. The present price of oil is. £23 per tun, and the value of the bone about £2500 per ton. The total value of the produce may be roughly estimated at, say, £18,120.

In Mr. Haldane's account of the Finwhaling from the northern Scotch ports\* mention is made of the interesting fact that six Atlantic Right Whales were killed in the past season by the steamers from Bunevenader (in Harris), and I am informed that a considerable quantity of this bone has come into the market, brought to New Bedford by an American whaler, but where obtained my informant knows not ; only a few years ago this species was regarded as all but extinct.

As usual, I have to express my thanks to Mr. Robert Kinnes, and to Mr. Mitchell's circular, for most of the above statistics.

\* 'Annals of Scottish Nat. Hist.' January, 1907, p. 13. A large bull Sperm Whale was also killed.

## NOTES AND QUERIES.

## MAMMALIA.

**Albinic *Mus rattus*.** — On January 28th a Yarmouth fish-hawker, who is always on the alert to hunt up queer fish and other curious creatures, brought me a most interesting specimen of a freshly-killed albinic *Mus rattus*, the first of the sort I have yet met with. He assured me that he had just taken it from his cat, a procedure she did not much resent, for she had already, that evening, captured two normal-coloured examples of the same species, and had had her fill of them. The Rat was quite uninjured, and by lamplight the coat exhibited the palest bluish-white hue imaginable; with eyes, hardly yet dimmed, of the most fiery red. The tail was a creamy white, and slightly less elongated than in *M. rattus* generally, the ears being greyish. The same night I forwarded the Rat to Dr. S. H. Long, of Norwich, who has a fairly good representative series of *M. rattus* and its cousins, including one lately sent him with a patch of white on the breast. The albino (a male) measured as follows: Head,  $1\frac{3}{4}$  in.; head and body, 6 in.; tail,  $5\frac{1}{2}$  in.—ARTHUR H. PATTERSON (Ibis House, Great Yarmouth).

## AVES.

**Peculiar Nesting-site for the Wheatear on the Sussex Coast.**—In June, 1906, whilst visiting the neighbourhood of Pevensey Bay, I observed several pairs of Wheatears (*Saxicola ænanthe*), which from their behaviour had nests in the vicinity. As there is nothing but long stretches of shingle beach, I could not locate the nesting situation, although I watched the birds disappear and then reappear as if from nowhere. I casually remarked on this fact to a lad who resided in the neighbourhood, and, greatly to my surprise, he informed me that he had "built the nesting-places himself, and would show me a nest then and there." I accepted his offer with, I must admit, some doubt as to his veracity. However, after about a mile's walk over nothing but bare shingle, he suddenly stopped, and, pointing to a small hole at our feet, not more than  $1\frac{1}{2}$  in. square, said, "there's the nest." After carefully clearing away the shingle he disclosed three bricks—two laid

side by side about two inches apart, and one covering them, and upon lifting the top brick, there was a Wheatear's nest with four fresh eggs. He informed me that he had several of these "traps"—as he described them—on the shingle, which I understood had been built during the previous winter. I found several more nests later—one with young, in a disused drain-pipe. I think the foregoing tends to show that when birds favour a certain locality they will easily adapt themselves to the surroundings. — P. W. HARVEY (Kilmartin Avenue, Norbury Park, S.W.).

Great Grey Shrike in Dorset.—On the 29th of December last, when out with my son, E. C. Linton, in the parish of Edmondsham, I saw three birds looking rather larger than a Starling, which were quite strange to us, and unknown in the district; and, not being able at once to name them, I sent off descriptive notes to the Rev. W. R. Linton, who passed them on to the Rev. F. C. R. Jourdain. On Monday, the 31st, my son again saw the three birds, and got a nearer view of them, and could distinguish one as being of brighter plumage, presumably a male. With this clearer view of their markings we fixed on the Great Grey Shrike (*Lanius excubitor*) as the bird we had seen. During January E. C. Linton, who had once again, three or four days later, caught sight of one of birds, visited the South Kensington Museum for the purpose of identifying them, and was completely satisfied as to their identity with the Great Grey Shrike. Meantime I had received Mr. Jourdain's opinion that this was the bird we had seen. There are some eight records of this species in the 'Birds of Dorset' (1887), the last of which is dated 1872. At the time the birds we saw visited Edmondsham almost the whole of Britain except the south-west was under snow, and severe weather no doubt drove them to a district where the little snow that had fallen did not lie. — E. F. LINTON (Edmondsham Rectory, Salisbury).

Hawfinch at Ballinasloe, Co. Galway.—A former curate of mine, the Rev. W. Forster, kindly sent me a specimen of a Hawfinch (*Coccothraustes vulgaris*), which he shot near his house at Mount Bernard, Ballinasloe, on 31st December last. He tells me that he "saw the bird twice, with about ten days' interval. It was in exactly the same place each time, outside the drawing-room window on the gravel. There were perhaps two hundred Chaffinches with it, but none others of its own kind. There was a copper-beech overhead. It may have been picking the nuts, though I think it probable it was only picking gravel. I did not hear it utter any note." I sent the bird to my friend Mr. Williams, Dame Street, Dublin, who says that its

stomach contained haws. I have never seen Hawfinches here, but used often when lying in ambush to watch them at Copenhurst, Cheshire, some years ago. They bred there, and were not uncommon. They used to work destruction in the kitchen-gardens—shelling the peas, and ruining a whole row in an incredibly short space of time.—  
WILLIAM W. FLEMYNG (Coolfin, Portlaw, Co. Waterford).

**Bitterns in Suffolk.**—During the recent hard weather two Bitterns (*Botaurus stellaris*) have been shot in Suffolk—one at Bardwell, which was preserved by Mr. Travis, of Bury, and the other at Thorndon, near Eye, on Jan. 5th. The latter was shot in the evening by a farmer on his flooded meadows, and taken to the rectory to be identified. The parson, a naturalist-sportsman, was equal to the occasion, and by his good offices it came into my possession in the flesh. It was a female, and, as one might expect after the difficulty it must have found in obtaining food in ice and snow, in poor condition, but in perfect plumage. The rapid thaw on the night of Jan. 1st produced extraordinary floods, turning our low-lying meadows into lakes, and on the following morning I saw Gulls (probably *Larus canus*) where I never noticed any before. The attraction would doubtless be drowned worms.  
JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

**Smew (*Mergus albellus*) in Cheshire.**—On Jan. 15th Mr. T. Hadfield and I saw a Smew on Tatton Mere. The bird was swimming among a number of Mallards, but its association with them was perhaps only accidental, for when we put the birds up it separated from the others, and went off at a great pace by itself. When we came across it again in another part of the mere it seemed equally indifferent to the Mallards and other fowl which swam close to it from time to time. It was a duck or an immature drake, having a rufous crown, pure white cheeks, and a grey back. The bird swam low in the water, but the pure white of its breast and belly were very conspicuous when it rolled, as a Grebe does, to preen itself. This species is rare inland in Cheshire (*cf.* Zool. 1905, pp. 143, 144). — CHARLES OLDHAM (Knutsford).

**Sabine's Snipe in Ireland.**—Three specimens of this rare variety have been shot in Ireland within a fortnight—one near Ballina, Co. Mayo, on the 10th December; one in Co. Leitrim, on the 15th; and the third in Co. Clare, on the 20th. The Co. Mayo and Clare specimens are almost identical, having no appearance of the stripes on back and head so noticeable in the Common Snipe; under parts of wings and axillaries sooty black; breast, belly right down to tail,

heavily barred with dark markings; tail very dark, with rich brown bars. The Co. Leitrim bird has narrow stripes down back and head; breast heavily barred with brown, but not so dark as the other specimens; no appearance of white on breast as usual in Common Snipe: altogether an intermediate form between the Common Snipe and Sabine's. It is interesting, if this is a variety and not a species, that three specimens should have been shot within such a short period.—W. J. WILLIAMS (2, Dame Street, Dublin).

*Tringa alpina* in Northamptonshire.—I have just seen a Dunlin in adult winter plumage, which was shot near Brackley on Jan. 30th.—O. V. APLIN.

*Colymbus glacialis* in Gloucestershire.—A Great Northern Diver was shot on the Isis at Hempsford, near Fairford, about the middle of November, 1906. Mr. Darbey, who preserved it, informs me that it was in full summer plumage.—O. V. APLIN.

Some Rare Visitors to Bartragh Island, Killala Bay.—The great snowstorm, and three days' terrific northerly gale accompanying it, brought some rare and strange visitors to the island. On the morning of Dec. 30th last my friend Captain Kirkwood, of Bartragh, observing some Geese feeding on a swampy flat between his stables and the sand-hills—taking his glass to examine them more closely—was greatly surprised to see a flock of fourteen Snow-Geese, four white adults and ten greyish-coloured birds that he took to be young ones. Going down to the stables, and concealed behind the gables, he watched them for some time as they fed up to within two hundred yards of where he was standing; so he easily identified them, their black-tipped primaries denoting the species. Captain Kirkwood continued watching them with great interest as they greedily fed towards him, when unfortunately a young dog, suddenly rushing out of the yard, disturbed them, when they rose and flew towards the mainland. Captain Kirkwood suggests that they were two broods with their parent birds, and this is very likely, for some years ago, meeting a flock of Bewick's Swans when out in my punt, I failed to get a shot at them, owing to the watchfulness of a very large old bird accompanied by a pair of grey cygnets. The latter kept close to him, and whenever I approached with the punt he always drew off, uttering a low call, at once responded to by the cygnets swimming up to him, and keeping quite close while he called, while the other birds scattered widely as they swam away. So in this instance of an old Swan taking care of its young ones after their long flight from Siberia, is it unlikely that some old Geese would

not take similar care of their young after arriving in this country from the far north? These Geese had evidently only arrived that morning, driven before the northerly gale, and, reaching Bartragh as the first land they met, dropped down to rest and feed. Another rare visitor was a splendid Snowy Owl, that Captain Kirkwood saw standing on a little hillock among the sand-hills. He watched it for some time, and was amused by the queer appearance of its great yellow eyes as it turned its head from side to side, watching every quarter. He left for a few minutes to send for his gun, but the bird disappeared before his return, probably to conceal itself among the high sand-hills of the rabbit-warren, where it could feed at its leisure on the rabbits. On the 8th inst. Capt. Kirkwood sent me a very fine specimen of the Glaucous Gull in its first year's plumage, which was found dead on the shore, but uninjured, and evidently starved. On Dec. 9th an Iceland Gull passed close by me; and again on the 14th, walking near the shore here, another, or the same bird, passed by me again. On the 20th inst. my friend Mr. H. Scroope, of Ballina, saw an Iceland Gull, with two Herring-Gulls, flying about the river between the two bridges at Ballina; it pitched in a field close to the river, when Mr. Scroope remarked that it was smaller, and of much slighter build than the Herring-Gulls, thus proving that it was an Iceland and not a Glaucous Gull. This bird was in the creamy-coloured plumage similar to the bird I saw on Dec. 9th and 14th, and may have been the same bird that had wandered up the river.—ROBERT WARREN (Moy View, Ballina).

Birds observed at Grindelwald.—In 'The Zoologist' (1905, p. 129), I came upon an account by the Rev. A. Ellison of some birds observed at Grindelwald. I have just been spending a fortnight there, and so perhaps a few more notes might be interesting. It is curious that your contributor does not mention the Raven, a bird which appeared to be abundant. I several times got within fifty yards of them, and, as I am well acquainted with the Raven both in its wild state and in captivity, I do not think I can have made any mistake in identifying the species. They would sometimes feed with the Carrion-Crows by the river. With regard to Blackbirds, I saw three or four, as far as I could see, all cock-birds. I also saw by the river for a few moments a Pipit, but did not have time to identify it. Dippers were common there. I did not go up the Faulhorn, which, from Mr. Ellison's letter, appears to be the best locality. In the chalet in which I was staying there was a fine specimen of an Eagle-Owl, shot at Grindelwald by Herr Boss, one of the proprietors of the Bear Hotel, who also told me that Eagles (mostly Golden) were almost common, particularly in the

autumn, and that there were also Ptarmigan, Black-game, and—I think—Capercaillie to be got. I heard a Woodpecker drumming, the noise being identical with that made by our Spotted Woodpeckers; Chaffinches were common. I was struck by the unusual tameness of the Great Tits—they would fly about inside the balconies of the chalets in search of food, and also by the number of nesting-boxes hanging up in the trees.—E. F. A. HAY (C. C. C. Oxford).

**Westward Movement of Birds during Snow.** — Replying to Mr. Ussher's enquiry (*ante*, p. 33), on Dec. 26th last a large number of birds passed south-west over this district, mostly in flocks; they were Starlings, Sky-Larks, and Lapwings. A few small birds (Chaffinches) were moving in the same direction, but only single birds. On Dec. 27th a few Starlings and Sky-Larks, and single small birds, presumably Chaffinches, all flying south-west. Dec. 28th, some flocks of Sky-Larks, besides single birds, and a few Lapwings were passing over.—ROBERT MORRIS (Uckfield, Sussex).

**Iceland Gulls in Donegal.**—On 30th December last (which was the first day of the thaw following the severe northern blizzards, accompanied by the heaviest falls of snow that have been experienced in Donegal for many years past), I visited Rosbeg, one of the Herring-fishing centres on that coast. Amongst the hundreds of other Gulls that were congregated in and around the small bay to feed upon the fish-offal, I noticed at least three immature Iceland Gulls, and there were probably several others. As to whether the species visits the locality so commonly every year, I could not gain any information.—J. STEELE-ELLIOTT (Dowles Manor, Salop).

## NOTICES OF NEW BOOKS.

*The History of the Collections contained in the Natural History Departments of the British Museum.* Vols. I. & II. Printed by order of the Trustees.

A HISTORY of our great Natural History Museum, written by the officers in charge of the collections, at the suggestion of Prof. E. Ray Lankester, the Director, is a publication that will be read by naturalists in all parts of the world. It records the gradual accumulation of that vast collection of natural objects which it contains, both animate and inanimate, with the sources from which a large portion of it was obtained ; so that it is a clue to the domicile of very many once private collections well known by repute, and now available for examination by students. The receptive process is still in progress, and one wonders what the ultimate contents of this vast biological repository may attain in size and number ; one also cannot refrain from sometimes thinking what will be the condition of the present collection in a thousand years' time ! Will time have dealt so gently with the objects which we identify and study with such loving care, that they may be available to posterity at the termination of another millennium ?

The nucleus of our Museum was the collections of Sir Hans Sloane, and those known under the names of the Cottonian and Harleian, the three being brought together under the designation of "the British Museum," placed under the care of a body of trustees, and lodged in Montagu House, Bloomsbury, purchased for their reception in 1754, and opened to the public in 1759. We read :— "Admission to the galleries of antiquities and natural history was at first by ticket only, issued on application in writing, and limited to ten persons, for each of three hours in the day." Even these visits were limited to a

safe-conduct through the galleries by officers of the house; it was not until the year 1810 that the Museum was freely accessible to the general public, and then only for three days in the week, from ten to four o'clock. Since then progress has been continuous; the fine building in Bloomsbury was completed in 1845, its reading-room in 1857, and the present great Nature's temple at South Kensington was constructed and handed over to the trustees in 1880.

Vol. I. is devoted to the Libraries, and the departments of Botany, Geology, and Minerals. The collection of books, manuscripts, and drawings relating to natural history is certainly the finest and most complete in the world. Botany and mineralogy are outside the purview of 'The Zoologist,' but geology is not, and paleontology is rapidly becoming an equipment necessary to every well-informed zoologist. We can trace the evolution of the paleontological collection. In 1767 we read of the acquisition of some remains of *Mastodon americanus*, and a molar tooth of *M. humboldti*; then each year's acquisitions become more important, and reflect the steady progress of the science. In 1880, 50,000 non-British fossils were received from the Museum of Practical Geology in Jermyn Street. In that year the total number of acquisitions numbered 55,496.

Vol. II. refers to the various zoological departments, and here our interest centres, but our space contracts. In "Mammals" we are glad to see a well-deserved tribute to Dr. J. E. Gray, apart from the question of his taxonomical views. "To his indomitable energy and enthusiasm, in the face of much opposition and discouragement from officials more interested in the Library and Antiquities than in natural history, the early growth and position of the mammal collection is mainly due." We may add that it is not likely to suffer from an absence of these personal qualities under the direction of Mr. Oldfield Thomas. In the section devoted to Birds, Dr. Bowdler Sharpe has contributed at length, and his pages are of the greatest interest to ornithologists. The specimens procured during Captain Cook's voyages have perished; they were inadequately prepared, and "were always mounted." There is, however, apparently one relic—a Tree-Starling (*Aplonis ulietensis*). From similar causes much destruction has ensued to the Montagu

Collection of British Birds. A good story is told of George Robert Gray, described by Professor Newton as a "thoroughly conscientious clerk": "Being continually twitted about his ignorance of birds in the field, he one day hired a gun, and went into Hertfordshire to shoot birds. He was promptly arrested by a keeper for trespassing." The great collection of Reptiles and Batrachians has wonderfully increased even in somewhat recent years. Mr. Boulenger tells us that Dr. Gray, working at the Lizards in 1845, had at his disposal only 428 specimens, representing 152 species. During the years 1882-1886, when Mr. Boulenger revised this group and prepared a catalogue, the number of species recognized by him as valid was 1616, of which 1206 were represented in the Museum by 9820 specimens. The other groups have similarly increased in specimens. In 1858, when Dr. Günther commenced the arrangement of the general collection of Fishes, it contained about 16,000 specimens; "at the present day the total number of specimens in the collection amounts to about 73,000."

When we come to the Insecta the roll-call is astounding, and the amount of work still to be done in identification is enormous. These vast hordes of insect specimens are appalling in number, and it is to the credit of the entomological department that so many have been identified, and the general collection so well arranged by a staff never large, but always enthusiastic. Private collections are continuously finding a home in the National Museum, and when we reflect on the number of insects still unknown and uncollected, the increasing number of our colonists who take an interest in entomology, and the many travellers who collect insects and present them to the nation, approximate numeration fails to afford a conception of what is likely to appear on the stock-taking list of this department in another hundred years.

We await another volume devoted to the natural history collections of the British Museum, an institution of which all naturalists may be proud, and to which the much vexed and now lean taxpayer may give a grunt of satisfaction.

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*Catalogue of the Noctuidæ in the Collection of the British Museum.*

By Sir GEORGE F. HAMPSON, Bart. Published by the Trustees of the British Museum.

THE author of this great descriptive Catalogue of the "Lepidoptera Phalænæ" has now completed his sixth volume, and the third devoted to the *Noctuidæ* of the world. This deals with the *Cucullianæ*, the third of the fifteen subfamilies into which the *Noctuidæ* are divided, 692 species belonging to 111 genera being described in it.

The moths enumerated and described in this volume are to a very large extent Nearctic and Palæarctic in distribution, comprising a number of our British species; and as a thorough revision of the classification and nomenclature has been made, and a full list of habitats given to each species, it demands the attention of British lepidopterists. This latter feature alone would make the book important, for in many, if not in most of the volumes relating to our fauna, the dispersal of the species is not traced beyond these islands, and thus a stunted and inadequate conception is given of their distributional position. At the same time affinities are shown to species lying beyond the limits of our fauna, and thus a greater biological interest can be afforded to a simple collection and identification of our British moths.

Sir George Hampson still maintains his standard of monumental labour and precision, and such labour, perhaps unrecognized by those who prefer some evolutionary speculation, has an importance beyond mere taxonomical technique, and affords the material on which a future evolutionary structure will be raised. We notice that in this series of coloured plates the three-colour process has been discarded, and a reversion to chromo-lithography has taken place.

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*A Synonymic Catalogue of Orthoptera.* By W. F. KIRBY. Vol. II. Orthoptera Saltatoria (Achetidæ et Phasgonuridæ). Published by the Trustees of the British Museum.

WE heartily welcome the second volume of this excellent catalogue, a compilation that will have the greatest influence in directing and assisting an increased study of the large order of

orthopterous insects. Mr. Kirby applies the name *Phasgonuridæ* to the "long-horned Grasshoppers" frequently referred to the *Locustidæ*, while he recognizes as true *Locustidæ* the "short-horned Grasshoppers," which are as often called *Acrididæ*, and these latter will form the material for the third and concluding volume of the catalogue. The method and style employed are the same as elsewhere used by this veteran compiler of synonymic entomological catalogues.

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*A Synonymic Catalogue of Homoptera.* By W. L. DISTANT.  
Part I. Cicadidæ. Published by the Trustees of the  
British Museum.

THIS is a catalogue of the genera and species of that well-known family of insects, so well advertized by the resonant males, and of which only one species is found in these islands. It would be out of place to say any more than that the material for the volume has been collected during many years, and that every endeavour has been made to reduce errors to the smallest compass.

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*Butterflies of Hongkong and South-east China.* By J. C. KERSHAW,  
F.E.S., &c. London: R. H. Porter.

WE have received parts i.-v. of this publication, which contains a large amount of observational matter, and is illustrated by coloured plates, which, however, have the dissimilitude of being much smaller than the size of the pages devoted to the text, probably owing to the limited extent in size to which the three-colour process can be applied. We reserve further notice till the completion of the work. It is printed in the East, but can be obtained from the London agency as above.

## EDITORIAL GLEANINGS.

IN the 'Annals of Scottish Natural History' (January, 1907), Mr. William Eagle Clarke records a new bird to the British fauna, by the occurrence of the Siberian Chiffchaff (*Phylloscopus tristis*) in Scotland. The specimen was received in October, 1902, from the Sule Skerry Lighthouse, a lonely rock-station situated out in the Atlantic, and some thirty-three miles west of Orkney, where it had been captured on the night of Sept. 23rd in the above-mentioned year.

FROM the Report for the year 1905 of the Fisheries of New South Wales we extract the following information respecting edible Eels. The five species of economic importance are as follows:—

(1) THE COMMON EEL (*Anguilla venegalensis*).—This is found in all the rivers and estuaries of the eastern watershed of New South Wales, and is the principal Eel (because the commonest) of the Sydney fish-markets. It attains a length of over three feet, with a weight of at least ten pounds; three to four pounds is, however, considered a fair average. On the mud-flats of the harbours, rivers, and estuaries, and the creeks which debouch thereon, this species occurs in great quantities, and there is practically an inexhaustible supply.

(2) THE SHORT-FINNED EEL (*A. australis*).—This fish is, from an economic point of view, to be classed with the previous species, though it is found more particularly in the fresh waters.

(3) THE CONGER EEL (*Leptocephalus labiatus*).—This Eel is more essentially a marine fish. It attains a weight of about twelve pounds, and a length of about four feet. There is reason to believe that it exists in these waters in considerable numbers, but nothing regarding that point can be said with certainty, owing to the haphazard nature of the Eel-fishery.

(4) THE SILVER EEL (*Muraenesox cinereus*).—This large Eel attains a length of about five feet. It occurs in considerable numbers along the costal waters, but is of a roving predaceous nature. Owing to the many fine bones, this species is only used for smoking purposes (for which it is well adapted). The fish is split from beneath, and a piece of coarse cloth is rubbed along the cut surfaces, this "picking up" the bones.

(5) THE GREEN EEL (*Gymnothorax prasina*).—This species is very common along the coast of New South Wales, but is usually only captured by hook and line, as the fish lives in rocky situations. It attains a weight of several pounds, with a length of about two feet six inches.